


# Aesthetic Awareness Of Design In Improvements To US 22 And Heritage Route Selection Criteria

Southwestern Pennsylvania





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In Improvements To US 22  
And  
Heritage Route Selection Criteria  
Southwestern Pennsylvania



America's Industrial Heritage Project  
United States Department of the Interior • National Park Service



US 22

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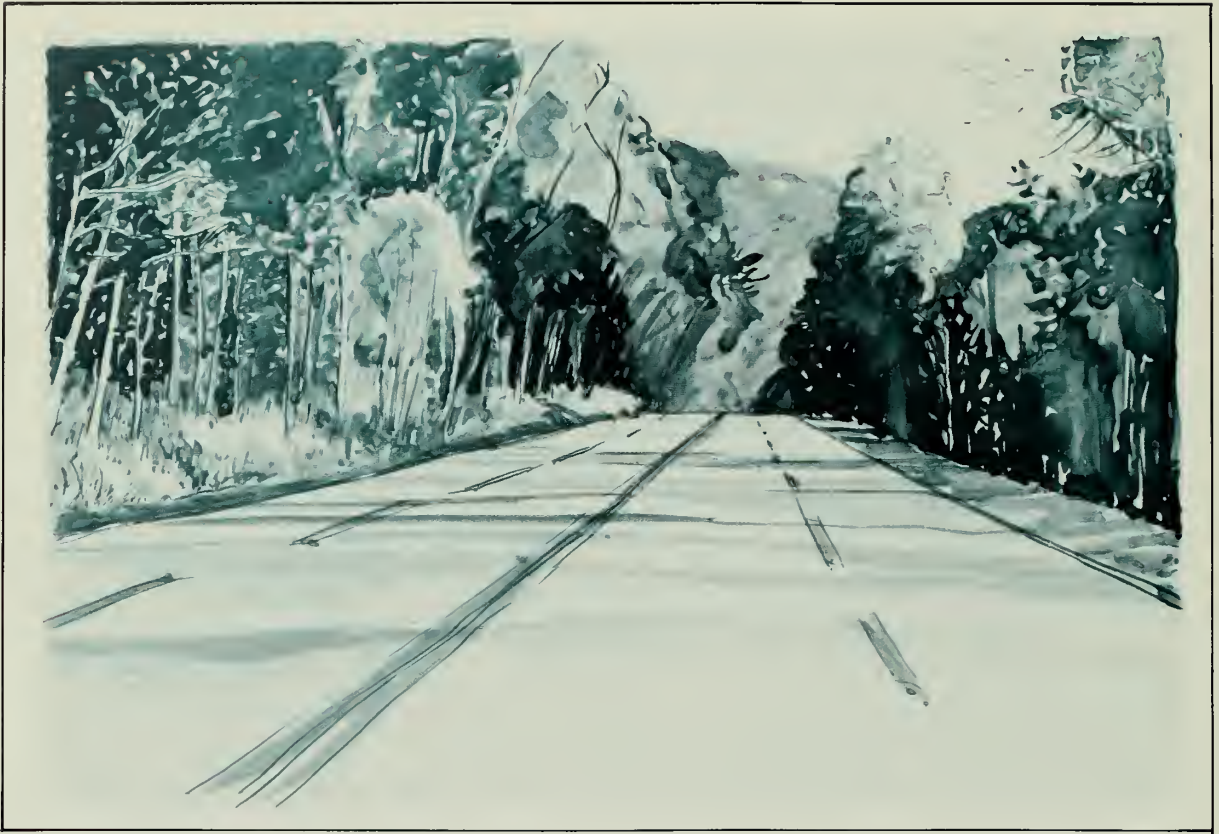
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Scenic highway

# INTRODUCTION

This report is an outgrowth of the Heritage Preservation Commission's *Action Plan*, which identified transportation and access as key elements of the America's Industrial Heritage Project (AIHP). The Transportation Committee of the Heritage Preservation Commission is currently focused on achieving two goals – improving transportation facilities and services in the region, both for visitors and area residents, and developing heritage tour routes in the region that will link historic sites and area attractions to US 22. This report is part of the continuing effort to implement the two goals/action items of the Transportation Committee. Although several needed improvements have been identified by the Transportation Committee, improvements to US 22 from Pittsburgh to Harrisburg are considered the highest priority. In addition, the Pennsylvania Department of Transportation (PENNDOT) and local jurisdictions are also studying the US 22 corridor and have indicated that improvements to this roadway are of high priority.

US 22 serves as a main east-west artery through the middle of the AIHP area, weaving through five of nine counties in the project region and bringing potentially millions of visitors and residents into the heart of western Pennsylvania's industrial, historic, recreational, and scenic resources. An essential highway through the region, US 22 links the Pittsburgh metropolitan area to the west and Johnstown, Altoona, Philadelphia, and other points to the east. The *Action Plan* states, in part, that state and federal technical assistance and federal funding is needed for

improved commercial and tourist traffic to the region, providing access to the region's rich historic sites, and providing for improvements and maintenance along area roads and highways – including beautification projects, visitor waysides and rest areas, unified signing, and litter pickup.

Federal and state legislation will be sought by the Heritage Preservation Commission to designate US 22 as the William Penn National Heritage Highway and to improve US 22. The proposed improvements are anticipated to be funded as a federal demonstration project. As indicated in the *Action Plan*, national heritage highway designation "will [likely] specify design and construction standards for US 22 as a parkway-like, largely limited access, four-lane facility that provides a safe and quality driving experience for visitors and an efficient route for commercial truck traffic." The project will demonstrate that parkway-like design treatment can be blended with a modern four-lane divided highway. PENNDOT will determine the appropriate roadway configuration and treatments for the various segments in the AIHP area.

Design documents for improvements to US 22 will indicate intersections and access points where tour/heritage routes lead to and from the region's historic sites and other attractions. Treatments regarding informational signing, medians and shoulders, rest areas, waysides, scenic overlooks, vegetation and landscaping, issues relating to adjacent commercial areas, and opportunities for grade separation and other aesthetic design treatments on US 22 will also be included.

Another of the Transportation Committee's high priority actions is to identify and develop regional heritage routes – tour routes that will link historic sites and area tourist attractions to the William Penn Highway (US 22). The tour routes will use existing state-maintained highways. Federal funds will be requested for design, construction, and placement of heritage route signing; design and construction of wayside exhibits related to the historic sites along each route; and design and printing of heritage route information brochures. These heritage routes are expected to enhance regional tourism efforts, and additional routes can be added as warranted. Once designated, maintenance of these heritage routes would continue to be the responsibility of PENNDOT.




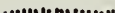

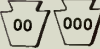
In summary, the purpose of this document is to (1) highlight the importance of the aesthetic treatment of improvements to US 22, (2) to reinforce the concepts in the "Guidelines to Improve the Aesthetic Quality of Roads in Pennsylvania," and (3) to emphasize that consideration of aesthetic and design factors is essential in the selection and development of heritage routes and to describe the criteria for and process of route selection.



Signs and development along US 22





-  WILLIAM PENN  
NATIONAL HERITAGE  
HIGHWAY-ROUTE 22
-  MAJOR REGIONAL  
ACCESS HIGHWAY
-  SUGGESTED  
TOUR ROUTE
-  SUGGESTED NATIONAL  
HERITAGE BYWAY
-  PENNSYLVANIA  
STATE ROUTE
-  PENNSYLVANIA  
TRAFFIC ROUTE

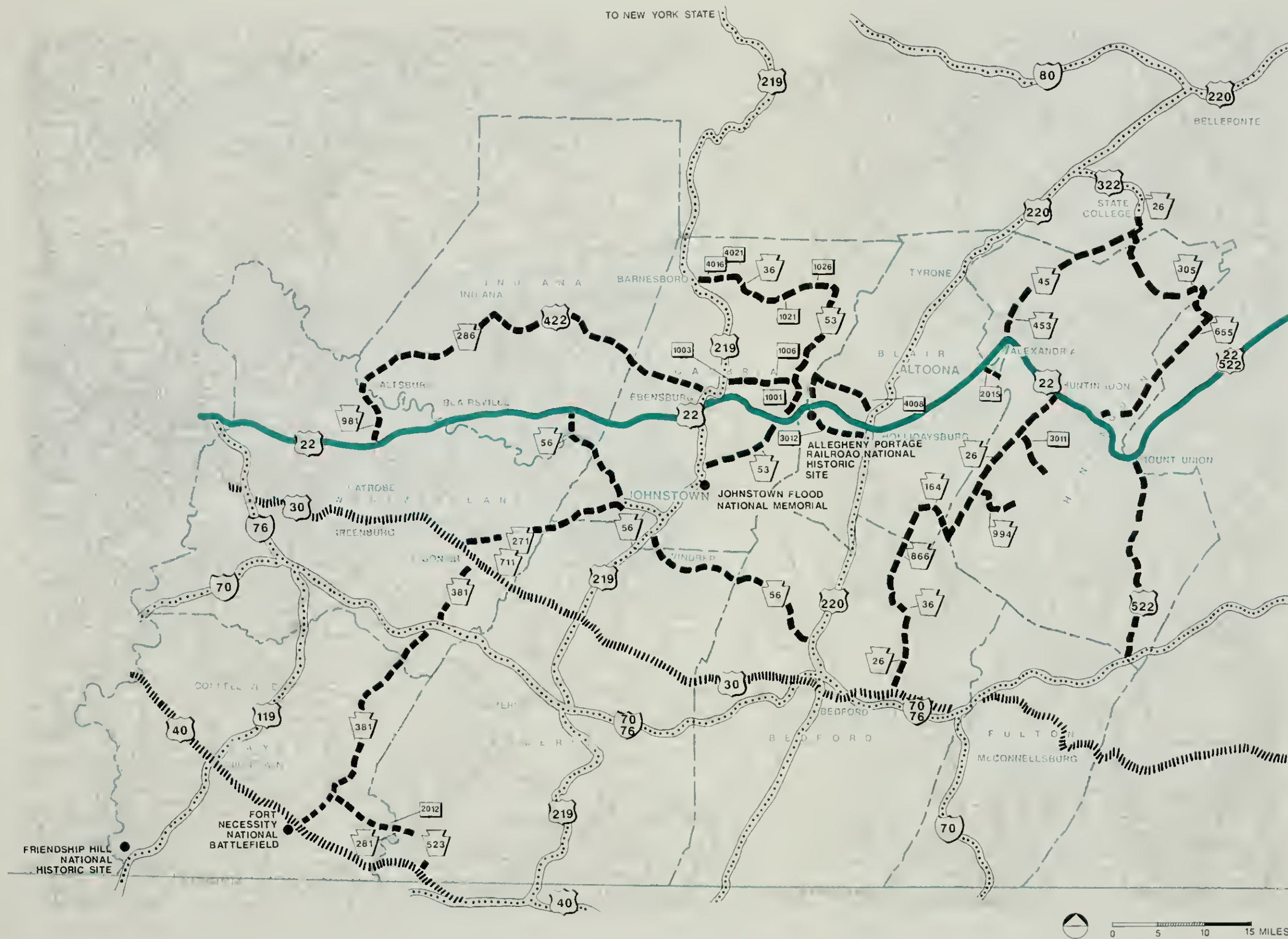
## WORKING TRANSPORTATION MAP



# AMERICA'S INDUSTRIAL HERITAGE PROJECT

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

956 | 40007B  
DSC | JULY 87



- WILLIAM PENN NATIONAL HERITAGE HIGHWAY-ROUTE 22
- MAJOR REGIONAL ACCESS HIGHWAY
- SUGGESTED TOUR ROUTE
- SUGGESTED NATIONAL HERITAGE BYWAY
- PENNSYLVANIA STATE ROUTE
- PENNSYLVANIA TRAFFIC ROUTE

WORKING  
TRANSPORTATION MAP



AMERICA'S  
INDUSTRIAL  
HERITAGE  
PROJECT

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

956 | 400078  
DSC | JULY 87



## US 22

### HISTORY

The US 22 corridor is very much a part of the history of the settlement and development of Pennsylvania. It was the first state road from Franktown westward over the mountains to Pittsburgh. Known as the Huntingdon, Cambria, and Indiana Turnpike in 1819, later it became the Great Northern Route. Now it is the William Penn Highway between Pittsburgh and Philadelphia.



Ridge and valley topography – Canoe Valley

### LANDFORM

US 22 weaves across three distinct topographical sections of Pennsylvania. These sections have been identified by Alan R. Geyer and William H. Bolles, authors of "Outstanding Scenic Geological Features of Pennsylvania" (Pennsylvania Bureau of Topographic and Geologic Survey 1979). From west to east these areas are the Pittsburgh Plateaus, Allegheny Mountains, and Appalachian Mountains sections. The Pittsburgh Plateaus section is characterized by rounded hills and green valleys with elevations reaching 1,250 feet. The Allegheny Mountains section includes three principal mountain ridges, trending northeast to southwest, that range from 2,778 feet to over 3,000 feet in elevation. The Appalachian Mountains section consists of a series of long, parallel, sharp-crested ridges separated by long narrow valleys. Mountaintop elevations range from 1,400 to 2,800 feet; valley floors are between 200 and 1,500 feet.

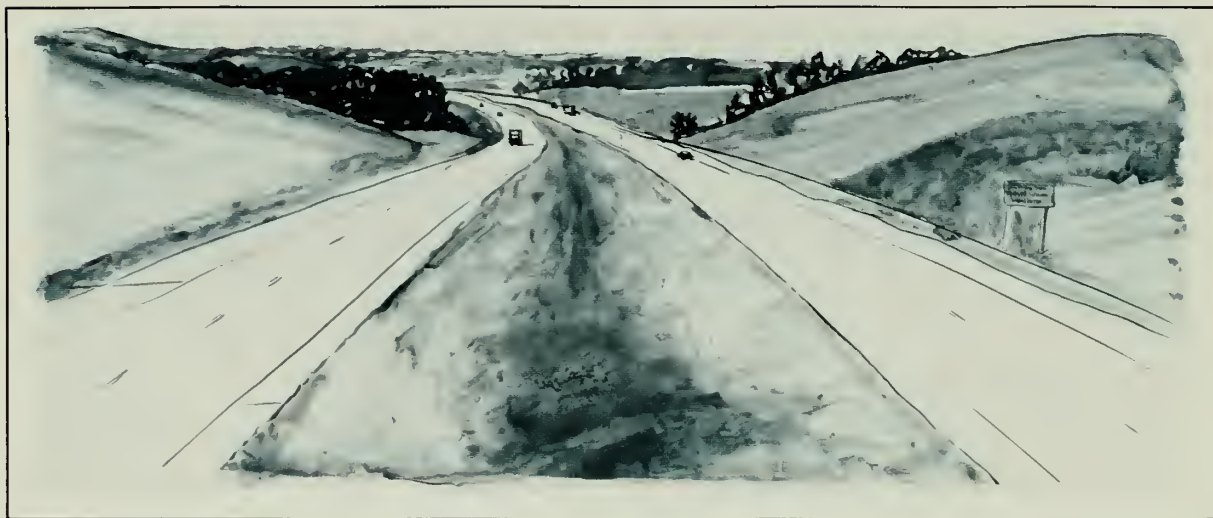


## VEGETATION

Originally, each of the five counties traversed by US 22 in the study area was heavily forested, but clearing for housing, farming, and commercial timber-cutting has eliminated nearly all virgin stands of timber. The predominate forest cover is oak/hickory, consisting mainly of white oak, red oak, and hickory; black oak and chestnut oak are dominant in some areas. A variety of native wildflowers, vines, shrubs, and ferns flourish within the five counties. Agricultural land use patterns create a contrast to the continuous woodland landscape, providing an identity and scenic diversity to the region. Clearings are an important visual element, as are the rural communities, each contrasting with the dominant landform of mountains and woodlands.

## SCENIC VIEWS

The scenic views from US 22 are representative of the variety of visual experiences available to motorists in western Pennsylvania, including panoramic views of the countryside's topography, vegetation, rural scenery, and views of historical and cultural resources, current industrial complexes, and the physical setting of local communities.



US 22 west of Altoona

## TYPICAL ROADWAY SECTIONS

US 22 contains a variety of roadway sections. Two-lane, three-lane, four-lane, five-lane, and divided four- to five-lane sections occur between Pittsburgh and Harrisburg, with numerous variations in roadway and right-of-way widths. Median treatments are numerous and generally are the products of a restrictive right-of-way. Paved surfacing is either asphalt concrete or



portland cement concrete on the newer sections. Shoulders vary from nonexistent in a few places to 12-foot-wide paved portland cement concrete sections on new segments. Along some sections there is a 5- to 15-foot transition area between the shoulder edge and the natural landscape edge; in some areas it is unsightly because of the gravel, asphalt, and dead grass. Cuts and fills are of a uniform slope and are planted heavily with crown vetch, which is not indigenous. Outer woodland edges closely follow the outer edge of the construction zone along newer sections of the roadway.

## **TRAFFIC VOLUMES**

Average daily traffic (ADT)\* on US 22 varies greatly in the five-county area that is part of the AIHP region. The ADT in the region ranges from near 5,000 in Blair County near the Blair/Huntingdon county line to 25,000 in Westmoreland County east of Monroeville. On a number of sections between Altoona and Monroeville, the ADT exceeds 14,000.

## **PRINCIPAL DESIGN CONCEPTS FOR US 22 IMPROVEMENTS**

Because of its rich history as a transportation corridor and the diverse and scenic topography it traverses, much attention should be focused on improving US 22 so that it is pleasurable to motorists, blends gently into the landscape, and is safe and efficient for all users.

As a principal design concept, US 22 should be improved to a four-lane, access-controlled facility. In some instances, it might be desirable and feasible to construct the roadway on a new alignment. In most developed areas where US 22 is being improved, a four- to five-lane highway is presently being constructed on the existing alignment, with the fifth lane being used as a left-turn lane at key intersections or as a climbing lane on steep grades. Improvements may have to be made on the existing alignment in developed areas or in areas where new rights-of-way cannot be obtained for various reasons, including high land acquisition costs. Roadway design should provide for four through-travel lanes along the route whether the existing alignment or a new alignment is used.

Sections of US 22 west of Ebensburg are being reconstructed to provide four lanes with a concrete barrier between roadways. At key intersections, the median barrier is being modified to provide left-turn lanes. Reconstructed sections will provide additional capacity and enhance safety.

\*ADT is defined in this report as the average daily traffic averaged over a full year.



# AESTHETIC AND DESIGN FACTORS TO BE CONSIDERED WHEN DESIGNING IMPROVEMENTS TO US 22

To enhance the aesthetic quality of roads in Pennsylvania, PENNDOT and the Pennsylvania Department of Environmental Resources prepared "Guidelines to Improve the Aesthetic Quality of Roads in Pennsylvania" in 1978. The guidelines serve as a supplement to PENNDOT design manuals and maintenance practices for rural and, in some instances, urban and local roads and streets. The concepts in the guidelines were presented to assist designers in achieving greater harmony between roads, related structures, and cultural and natural landscape features and to foster a greater aesthetic awareness in roadway design.

Application of these guidelines in the design stages of US 22 would ensure that roadway improvements on existing or any new alignments would be aesthetically pleasing to motorists and provide a safe and efficient transportation link. The following sections highlight a number of the concepts presented in those guidelines.

## MULTILANE HIGHWAYS

### Divided Highways

A divided highway is one where traffic in opposite directions shares a common median. It may be on a single roadway, or the two roadways may be widely separated. The width of the median can vary and is generally governed by visual appearance, available right-of-way, terrain,



Divided four-lane highway

intersection treatment, safety, and costs. Advantages of divided multilane highways include enhanced safety, an easier blending of the roadway with the terrain, preservation of vegetation, driving comfort, and aesthetic appeal. Long sections of roadway running out to the horizon or parallel lengths of roadway create a monotonous situation for motorists that even careful choice of roadside planting cannot soften. Contributing to this problem of parallelism are (1) narrow medians of a regular width; (2) barriers sited relatively close to the roadway, especially if they cut off the view of the countryside; (3) fences, hedges, roadway edge delineations, utility lines, and long tangents; and (4) trees or shrubs that show no variation over long distances.

### **Independent Alignment**

An independent alignment contains individually designed roadways with variable separation, median widths, and roadway levels. It requires additional right-of-way to accommodate the desired elements of the parkway-like roadway.

The concept of blending the highway from property line to property line and designing the roadway as a unit, with the median pavement and roadsides properly related, can only occur with adequate rights-of-way.



Independent alignment

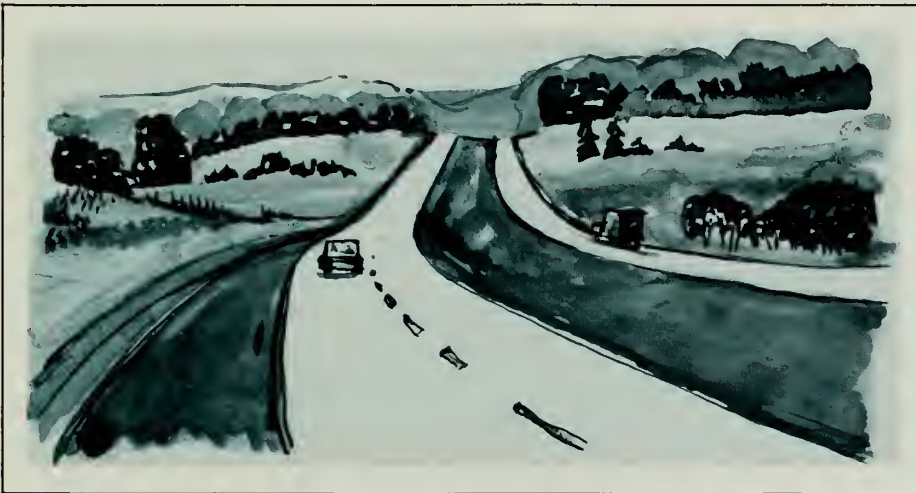
Thousands of miles of the nation's multilane highways are monotonous. The nation's parkways and some portions of the interstate system have dealt with this problem by making use of generous corridors of land. As reconstruction of US 22 continues, it may be possible to seek



new alignments rather than reconstruct on the existing right-of-way. If this occurs, additional consideration should be given to varying rights-of-way and median widths and blending roadway sections with the natural landscape.

## ROADWAY GEOMETRICS

Early road design techniques were based on railroad design, which features long straight sections or tangents connected by relatively short curves, depending on terrain and other factors. It was natural for early road engineers to extend this technology to road design. New concepts of horizontal and vertical alignment, referred to as curvilinear alignment, were introduced in the 1920s. Under this design concept, a roadway is characterized by long sweeping curves that are connected by short tangents and replicate the natural contours. State-of-the-art curvilinear road design has replaced tangents with transitional spiral curves. The vertical alignment flows smoothly without abrupt grade changes. Broken-backed curves, short curves, reverse curves without proper "run-off," and other idiosyncrasies of alignment should be avoided.



Coordination of horizontal and vertical alignments

A key factor in current curvilinear design is the careful coordination of horizontal and vertical alignments. This is based on the theory that there is a correlation between the horizontal and vertical, even though they tend to be designed separately. Optimally, a horizontal curve is matched with a vertical curve, and horizontal and vertical curves on the same road should feel and appear uniform in the degree to which they change direction.

## RIGHT-OF-WAY REQUIREMENTS

The magnitude and importance of right-of-way acquisition is fundamental to the success of all well-designed highways. Traditionally, engineering, safety, and economics determined the amount of land required for a new road. Recently, factors of aesthetics, pleasure driving, and

recreation are being recognized as equally vital. Excellent examples of this aesthetic awareness are displayed in sections of US 220 between Bedford and Altoona and on US 219 between Somerset and Ebensburg. The right-of-way should be adequate to protect and preserve vegetation, wetlands, streams, unique geological factors, and adjacent historical, cultural, and natural resources. Adequate rights-of-way create an important buffer or transition zone between the built and natural environment, provide the opportunity to regulate the intrusion of billboards, allow coordination of the development of commercial activity at interchanges, address problems caused by lack of access control and turning movements, and provide space for additional travel or turn lanes/ramps.

Rights-of-way are needed to develop waysides, scenic overlooks, and rest areas to make the road corridor more pleasant and informative for visitors. Highway interchanges also require more right-of-way than normal road corridors.



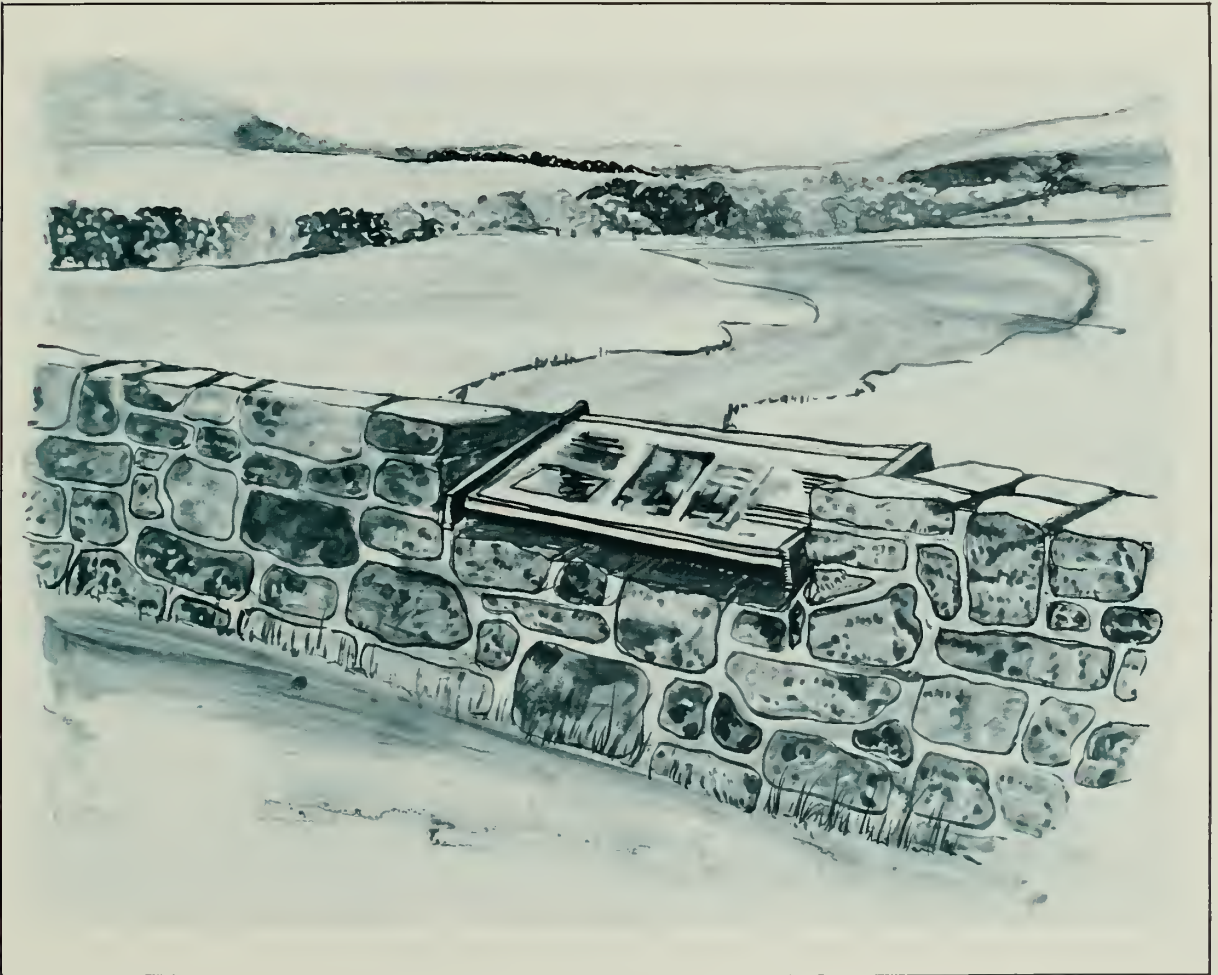
Varying median widths – 4-lane facility with adjacent service road

## MEDIANS

The main purpose of a median is to separate opposing traffic. According to PENNDOT's "Highway Design," volume II, all medians that are less than 50 feet require the use of an approved barrier system.

Medians between 50 and 100 feet are restrictive in regard to preserving and planting vegetation. A clear zone or recovery area of 30 feet from the inside edge of both roadways is required for safety. Trees that have attained or will attain a 4-inch diameter at maturity should not be preserved or planted within the clear zone. However, some latitude is provided for planting smaller trees, shrubs, native grasses, and flowers. For the most part, the use of these plants has not yet been employed as an alternative to the large expanses of mowed medians. Considerable reduction of mowing and related maintenance would occur if lawn areas were replaced with more indigenous plant materials.

Medians greater than 100 feet allow greater diversity of plant material preservation and selection.



Wayside concept



## **WAYSIDES AND SCENIC OVERLOOKS**

Waysides and scenic overlooks are desirable amenities, providing parking, sanitary facilities, walks, interpretive information, and other appropriate features for the public's enjoyment and education. Potential sites should be identified in the early planning stages so that right-of-way needs may be determined. The location, size, and frequency of these facilities depend largely on the nature of the highway itself, including uniqueness of views and features, potential use, site constraints, maintenance requirements, and visitor information needs.

## **ROADWAY TREATMENT**

The roadway is the portion of a highway that is for vehicular use. Elements of the roadway include the pavement surface, traveled ways, and shoulders.

### **Pavement Surface Material**

The pavement surface is the most obvious component of the highway because the pavement occupies a large portion of a driver's view. The desired appearance of the pavement surface and its visual impact on the landscape have frequently been given less attention than structural requirements, safety, and economy.

The options for pavement surface materials are generally limited to asphalt concrete or portland cement concrete pavement; neither may be complementary to the natural surroundings from a color and texture standpoint. Coloration techniques using pigments to give concrete pavement a more earth-tone appearance are possible, but unfortunately these color additives increase initial costs, reduce durability, and present considerable maintenance problems. In addition, it is difficult to achieve uniform color over many miles of road. One viable alternative, if materials are available in sufficient quantities, would be the use of dark sands and aggregates in the concrete mix. This would reduce the natural light tone of portland cement concrete and, when used with asphalt concrete, would produce a variegated surface with more natural color tones.

Most importantly the pavement and roadway base must meet the volume and loading requirements on US 22. The pavement surface must also offer smooth riding qualities and good skid resistance.

### **Traveled Way**

The traveled way is that portion of the roadway that is available for the movement of vehicles, excluding shoulders and auxiliary lanes. No feature of a highway has a greater influence on the safety and comfort of driving than the width and condition of the traveled way. On high-volume, high-speed highways, a 12-foot lane is generally used.

Increased lane width results in improved safety and traffic capacity. The major components influencing the width of the traveled way include the design traffic volume, design speed, and the percentage of heavy vehicles in the traffic stream.



Many factors determine whether a traveled way fits pleasantly into its surroundings and is in a harmonious relationship with the surrounding environment and landscape elements. Problems associated with a wide traveled way include

- acquiring a wide right-of-way
- motorists having less "feel of the land"
- the sight of pavement dominating the windshield view
- more terrain modification (i.e., cuts and fills) being required

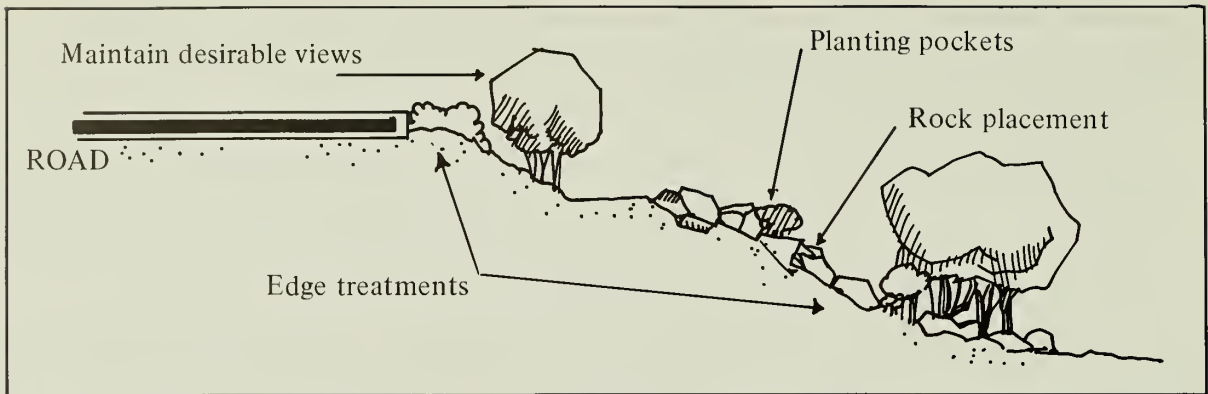
The impact of a wide traveled way can be reduced by

- reducing the length seen at one time, i.e., avoiding long, straight sections
- limiting the field of vision between opposing lanes of traffic
- varying the width or elevation of the central median if one exists
- sloping and rounding cuts and fills relative to the natural contours of adjacent land
- planting trees
- exploiting views and screening intrusive elements through compositional design treatment

## **Shoulder**

The outside shoulder of the roadway is contiguous with the traveled way, provides lateral support of base and surface courses, and accommodates stopped/emergency vehicles. Ideally, a vehicle stopped on the outside shoulder should clear the traveled way by at least a foot. The median shoulder on a divided highway serves as a recovery area for vehicles that leave the traveled way.

The shoulder influences the appearance of the highway in the following ways. First, it widens the paved area, thus increasing the scale of the roadway in relationship to the surrounding area. Second, the shoulder surface may be of a different surface material or texture or color than the traveled way to delineate the edge of the traveled way. Third, shoulders 8 feet and wider can create a sense of openness. Fourth, the shoulder provides an important visual edge where it meets the side or cross slopes and a transition is made to the natural environment.



Roadside treatments

## ROADSIDE AND RIGHT-OF-WAY TREATMENT

The roadside is that portion of the highway that extends continuously from the outside edge of the shoulder to the toe or top of the slope running parallel along both sides of the road corridor. The right-of-way should extend beyond the roadside to provide space for utilities and drainage improvements where required, and to provide greater freedom for selective thinning, planting, and preserving the natural character of adjacent lands. There should be a harmonious transition from the rigid structural lines of the roadway to the irregular geometric patterns and lines of the adjacent landscape. Elements that must be considered in roadside and right-of-way treatment include clearing, grading, slope retention, drainage, planting, guide rails, and signing.

### Clearing

One of the first operations on most construction projects in the eastern U.S. is the removal of trees and other woody growth from the construction zone. US 22 passes through many heavily forested areas, principally oak and hickories. Unless specified clearing techniques are used, the result will often be an unnatural forest edge that leaves vertical vegetation "walls" at the top and bottom of the cut-and-fill slopes. Successful selective clearing techniques include the removal of taller older trees while leaving smaller younger specimens. This method produces a softer and more natural transition from the roadway to the landscape, and the forest appears to be closer to the road. This technique allows the roadway to blend with adjacent indigenous plant materials and provides a smooth gradation from grass and wildflowers to shrubs and small trees and finally to mature tree stands.

Selective clearing techniques can also be used to blend with natural openings and match open areas of the roadside and right-of-way. Where appropriate, existing vegetation can be cleared to open views and frame scenic overlooks. When views are cleared, an adequate area must be opened so that the fast-moving motorist has time to enjoy the view.

In some instances plant materials should be maintained or introduced to buffer views of unsightly development.

Guidelines for selective thinning and clearing should be developed as part of the contract documents, and qualified inspectors should oversee clearing operations and adjust clearing limits as needed.

## Grading

Reshaping the landform is a significant factor when considering roadside design. The design of the roadway cross section should not be restricted by a limited right-of-way. In the past, cut-and-fill slopes were designed primarily to satisfy requirements of slope stability and to balance material quantities. This approach imposes the road design upon the land and provides motorists little appreciation for the natural terrain upon which the road is constructed.

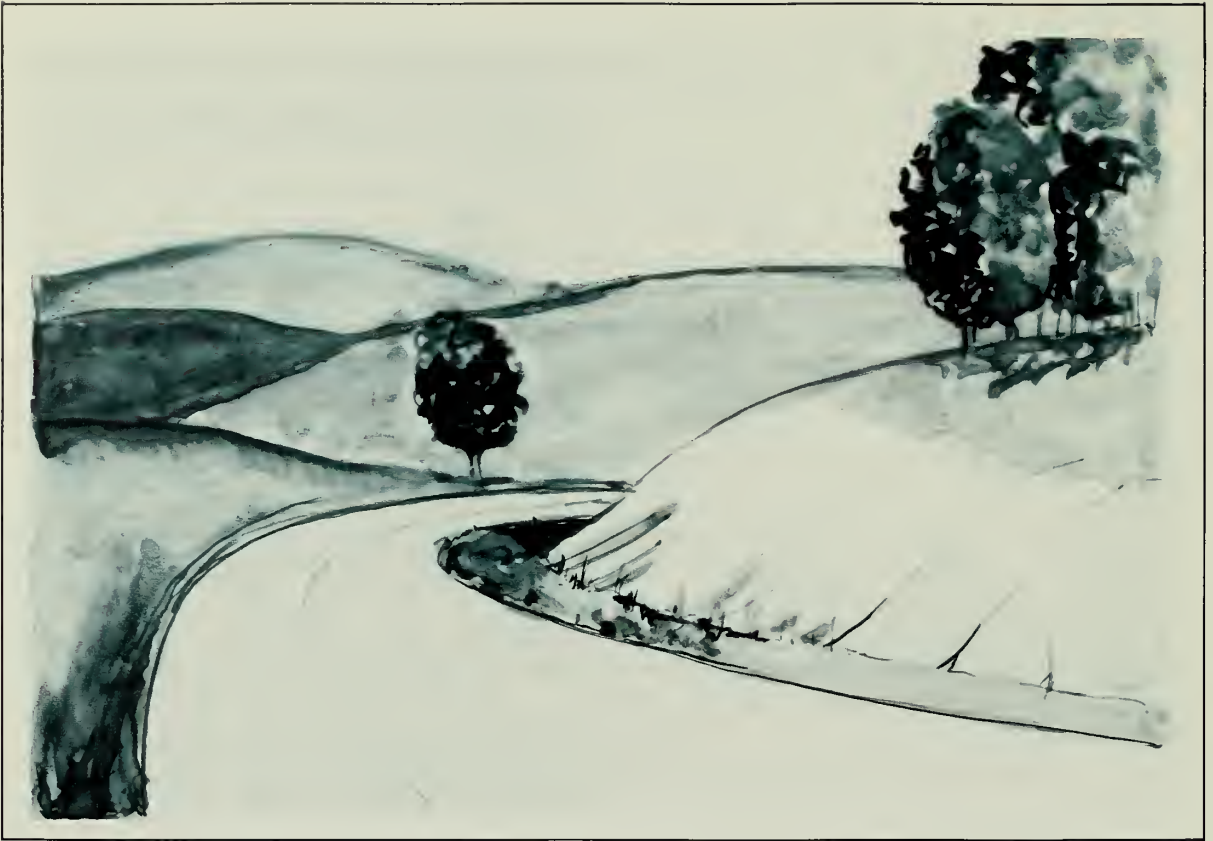
Proven grading techniques include the following:

Parabolic curved slopes: Slopes in cross section should begin flat at the toe, gradually steepen proportionately, and finish with a rounded top.



Lay-back draw; cut slope flattened to match slope of draw

Lay-back draws: Where natural draws are encountered, the cut slope should be laid back and flattened to match that of the draw. This treatment visually continues existing drainageways and provides visual relief to the roadside edge.



Cut slope rounded at top

**Rounding:** All cut slopes should be rounded at the top to present a softer transition line between constructed and existing slopes and to promote revegetation. The lower the cut, the flatter the slope should be. Rounding is equally effective at the toe of the slope to blend the fill slope with existing terrain. Naturally flat slopes should be used wherever feasible.

**Daylighting:** Removing a leftover knob or sliver ridge on the side of a road cut – between the road and a natural slope – may sometimes lead to a smoother landform, reduce maintenance, and open up attractive views.

Special grading techniques should be incorporated into contract documents, and qualified on-site supervision should be performed during initial earthwork through final grading.





Rock-cut sculpturing to produce a natural bench effect

## Slope Retention

In areas of steep, rugged terrain or where a particular soil or rock condition dictates near vertical slopes, various types of slope retention techniques should be considered.

**Rock-cut sculpturing:** This technique should produce a staggered bench effect that would reflect the natural terrain and use natural fracture lines in the rock. Presplitting blasting techniques should be avoided if possible.

**Diversion dike:** A diversion dike at the top of a steep cut slope collects and diverts water away from the slope to minimize erosion.

**Slope benches and drains:** Separated or irregular stair-step-graded slopes should be given consideration. The steps should be insloped to encourage water infiltration, collect rockfall from slopes above, and enhance vegetative growth. Steps should vary in size and should blend and flow with the surrounding topography. Slope drains are necessary at times to control erosion. If used permanently, they appear less obtrusive if they are faced with stone.

Other slope retention techniques include the use of seeding/mulching, erosion control mats, pavement, riprap, retaining walls, and gabions.

## **Drainage**

Drainage is the collection, diversion, and dispersal of water through surface or subsurface means. Although necessary drainage structures should be as inconspicuous as possible, the use of broad rounded drainageways or swale-like depressions are the most pleasing to the eye. Where necessary, drainageways should be sodded to accelerate revegetation and minimize erosion. When steeper grades require a paved ditch, materials such as native stone or some other material that can be colored to blend with the surroundings is more desirable than a strip of light-colored concrete.

When culvert ends are visible from the road, they should have a finished appearance such as a headwall of appropriate materials. Every effort should be made to allow streams and drainageways to follow their natural channels.

## **Planting**

Plants can add to traffic safety by delineating the road corridor and alerting drivers to changes in alignment. In recent years, their usefulness as a slope stabilizer for large cuts and fills has been widely recognized. Bioengineering has emerged, using plant materials on a mammoth scale for stabilizing and revegetating severely scarred slopes. Plantings should visually relate the road corridor to the natural landscape.

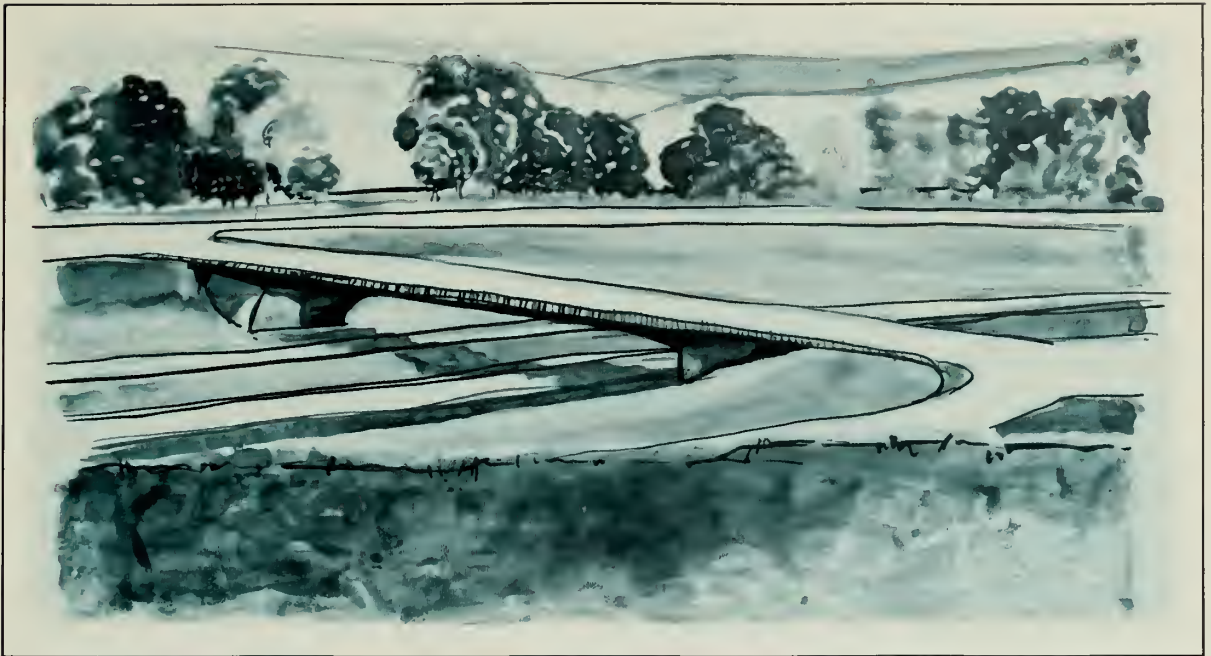
Roadside planting should relate to the natural landscape compositions that exist within the area that the road passes through. Native grasses and flowers graduating to shrubs, small trees, or appropriate native vegetation should exist or be planted in the roadside area. In an urban area, a different style of planting may be more appropriate than in pastoral, rural, or wooded settings. The key is to identify the materials and techniques that are appropriate to the surrounding landscape.

Knowledge of plant ecology and habitat is important in the selection and utilization of natural associations in planting design. Indigenous plant species including wildflowers, grasses, shrubs, and trees should be used.

A collaborative effort of PENNDOT and the Department of Environmental Resources or an appropriate agency/organization should establish a collection of native plant materials and seeds to be used for roadside planting and revegetation of slopes. It is often necessary to start the process of seed and plant material collection, propagation, and production a number of years before construction to ensure the availability of adequate quantities of materials for revegetation of disturbed areas.

## **Structures**

Major structures, such as bridges, grade separations, interchanges, tunnels, and walls, have a major impact on the visual quality of the road. Structures should blend gracefully into their environment and the overall design through appropriate use of materials, forms, colors, and textures.



Example of bridge blending into its environment



Retaining wall with guide rail near Mt. Union



Various kinds of retaining walls can reduce the visual impacts of roadways on the landscape by minimizing the width of the roadway. Walls should also blend with the landscape through selection of materials, textures, and colors. Crib walls tend to be disharmonious. Alternatives include reinforced earth walls, stone or stone-faced walls, and textured and integrally colored concrete walls.

## **Guide Rails and Safety Devices**

Commonly viewed as mere safety devices, guide rails are important components of a roadway environment and should be designed to be visually compatible with the entire facility.

Guide rails available to date are primarily the W beam or box beam, which in Pennsylvania are generally mounted on steel posts. The most common finish is galvanized metal. Weathered steel barriers improve the aesthetic appearance of a roadway environment but are more costly than W-shaped guide rails and deteriorate more rapidly if salt is used in winter operations. Guide rails can be painted, but more maintenance is required to maintain a consistent surface color.

The National Park Service has successfully installed crash-tested, steel-strap, reinforced timber guide rails, and the Federal Highway Administration is now testing other alternatives for use on park roads. One type that will be tested is a modified rounded log design reminiscent of the historic guide rails commonly used in places like Yellowstone National Park.

Like signs, guide rails are so visually prominent that they form a major component of the roadside environment and therefore warrant careful consideration in their design. Other barriers, curbs, and edge guides are also important visual and traffic control elements of the roadway landscape.

Nonstandard or new types of guide rails must be approved by PENNDOT and the Federal Highway Administration if federal funding administered by FHWA is used.

## **Signs**

The purpose of signs is to provide traffic control, increase safety, and provide information to drivers. Signs can be categorized into three general classifications: regulatory, warning, and guide signs. Standard shapes, colors, and dimensions have been developed and are used throughout the United States.

The *Manual of Uniform Traffic Control Devices* contains considerable detail regarding design, location, and application of road signs and markings as they apply to highways. However, little effort has been made to comprehensively address the need to coordinate sign design, scale, and placement. Such efforts would contribute positively to roadway aesthetics and make it easier for motorists to process sign information. The proliferation of signs is one of the most distracting features littering urban and rural roadways, including US 22.

Some general guidelines for improvement are as follows:

The number of signs should be minimal, and signs should be sized unobtrusively but meet standards for safety and information needs.

The lettering style and layout should be readable, attractive, and consistent.

White letters should be used on a dark background.

When possible signs should be sited against a background of land or trees rather than sky.

Universally recognizable symbols are preferable to lettering.

Existing commercial advertising devices should be inventoried and evaluated for compliance with current rules for their use.

All signs should be mounted on breakaway posts that should be colored to blend with the surrounding area.

The back faces of signs should be painted or stained with a color that blends in with the background.

A committee of designers and representatives from the business community should be formed to develop a consistent, aesthetically pleasing sign system.

As with guide rails, PENNDOT must approve new or nonstandard signs, and all signs must be produced by a PENNDOT-approved sign manufacturer.

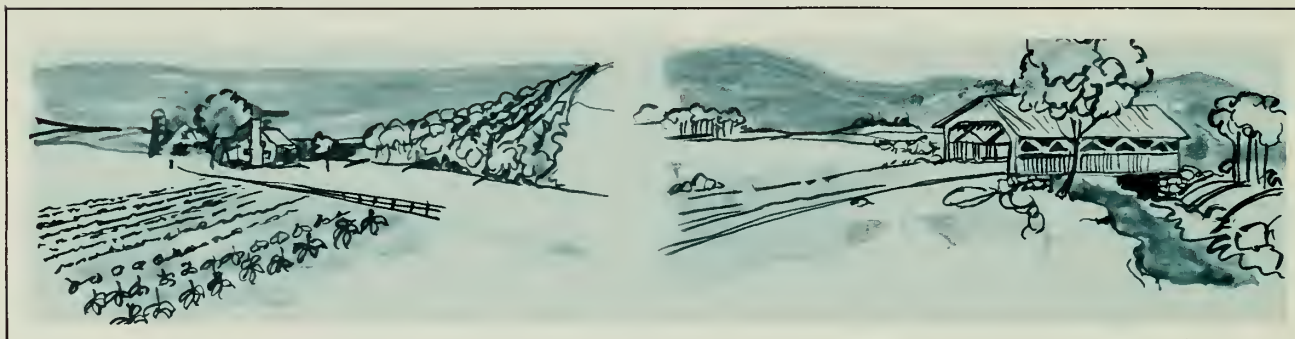
## HERITAGE ROUTES

The *Action Plan* contains a working transportation map identifying suggested heritage (tour) routes for the nine-county AIHP region. These routes should provide direct access to cultural, natural, and recreation sites in the region from the interstate highway system, US 22, and other major regional highways. The heritage routes should be designated on existing state roads and highways and should link historical and cultural sites, regional attractions, and recreation areas while taking advantage of landscape features and scenic views. Generally, these routes should form loops, using alternate routes that have less commercial or through traffic to connect to principal visitor access highways leading to, from, and through the region. Heritage routes should be using the AIHP logo.

### CRITERIA FOR HERITAGE ROUTE SELECTION

An evaluation of the importance of the individual sites is the first task. The attractions or resources should be significant enough to become a destination or a meaningful stop along the route. After the cultural, natural, and recreation sites have been chosen, the most important criteria for selection of heritage routes should be to provide scenic and pleasant access to these sites from the major highways traversing the region. The following criteria should also be considered.

The heritage route should provide motorists with a continuous visual experience. The angle at which certain areas and features of the landscape may be seen from the highway in both directions of travel, the foreground features framing them, and the period of time during which they can be observed all contribute to the visual experience. The range of visibility could be distant horizons or vast panoramas or buildings along the route and could be altered by providing vegetation screening or, conversely, by vista clearing.



Elements along the heritage routes



A variety of experiences should be provided to motorists, including examples of the different landscapes in the region. The unique flora and fauna of an area could be an important consideration in route selection, even when the range of visibility is limited. The motorist's experience should be enhanced by the presence of complementary development such as rest stops, shops, picnic areas, campgrounds, trails, and bike paths.

The visual impact of a structure, feature, or area should be evaluated in terms of its uniqueness, size, the scale of details, the boldness of form, the vividness of color, and other specific characteristics in relation to its distance from the viewer and the duration of the visual experience.

Other criteria for route selection are that the routes should be

state-maintained highways and specific access roads to the attractions

accessible from US 22 and other major highways in the project region

safe, both in terms of adequate geometrics and structural integrity

free of litter, with offensive uses screened by vegetation where possible

## **PROCESS FOR HERITAGE ROUTE SELECTION**

The routes suggested in the *Action Plan* and other routes that may be selected should be evaluated by a planning/design team using the above criteria to recommend routes for designation. The design team's evaluation should be transmitted to the Transportation Committee of the Heritage Preservation Commission, PENNDOT, and other appropriate commonwealth agencies for comment and information input. Changes should be made to the proposals as needed.

Public meetings should be held with municipal officials and residents living along the proposed routes. The purpose of these meetings would be to assess public responses to the evaluation and to explain responsibilities and opportunities associated with establishment of these routes.

After the information has been reviewed and evaluated from the process described above, necessary modifications would be made to the recommended routes. The final recommended routes and support documentation would be reviewed by the Transportation Committee and transmitted to the full Heritage Preservation Commission for approval.

The commission would then forward the final documentation to PENNDOT, other appropriate commonwealth agencies, the National Park Service directorate, and other appropriate federal agencies for initial steps leading to implementation of the heritage route system.

As appropriate, the planning/design team would assist in presenting committee recommendations.

## MANAGEMENT TECHNIQUES FOR A TYPICAL HERITAGE ROUTE

The following management techniques should be implemented for the heritage routes:

Visitors traveling into the region should get heritage route information/maps at regional visitor centers.

Signs with the AIHP logo on the major highways should direct motorists to the beginning of a route.

Wayside and pull-off areas should be maintained at the beginning of each heritage route. A self-guiding brochure should be available at this site. The points of interest on the brochure should be numbered and signed accordingly along the route. The AIHP logo should be used on the brochure and at selected route locations.

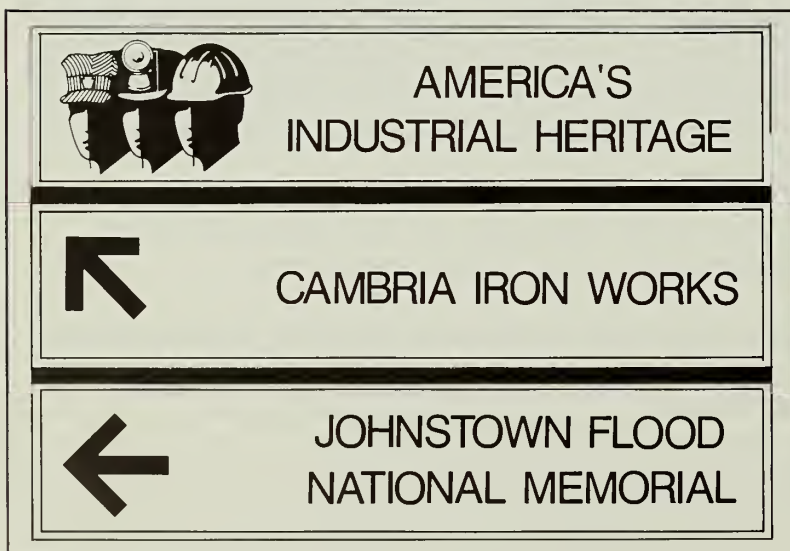
New scenic overlooks, rest areas, and other facilities should be created so visitors can enjoy and understand the resources.

Following the selection of sites for the development of wayside exhibits and scenic overlooks, the National Park Service will provide assistance for the design and construction of these roadside amenities. After construction, PENNDOT would assume responsibility for maintenance of waysides and scenic overlooks.

There should be a litter cleanup program established along with the route designation program to improve visual conditions along the routes.

Consideration should also be given to the establishment of a scenic corridor protection program along one or more of the routes where protection of scenic views is important. Local jurisdictions and public agencies managing the land along selected scenic routes should adopt a program of protection of the corridor.

Heritage routes should be evaluated from time to time by the Heritage Preservation Commission staff to ensure visitor experiences and the physical conditions of the routes are in keeping with commission standards.



Possible heritage route sign

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As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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